

CLAIMS

What is claimed is:

1. A foam comprising:
at least about 50 weight percent thermoplastic polymer; and
5 from about 5 to about 50 weight parts of particles dispersed in the thermoplastic polymer per 100 weight parts of the thermoplastic polymer, wherein:
the particles have an average size in the longest dimension of from about 5 to about 300 microns;
the foam is closed-cell; and
10 provided that if the particles are electrically conductive, then the foam has a surface resistivity of at least about 1×10^6 ohms.
2. The foam of claim 1 wherein the particles comprise at least about 50% inorganic material by weight of the particles.
3. The foam of claim 1 wherein the particles comprise at least about 90% inorganic
15 material by weight of the particles.
4. The foam of claim 1 wherein the particles comprise at least about 50% organic material by weight of the particles.
5. The foam of claim 1 wherein the particles comprise one or more clays selected from mica and vermiculite.
- 20 6. The foam of claim 1 wherein the particles comprise aluminum.
7. The foam of claim 1 wherein the particles comprise glass.
8. The foam of claim 1 comprising at most about 40 weight parts of the particles dispersed in the thermoplastic polymer per 100 weight parts of the thermoplastic polymer.
9. The foam of claim 1 comprising at most about 30 weight parts of the particles
25 dispersed in the thermoplastic polymer per 100 weight parts of the thermoplastic polymer.
10. The foam of claim 1 comprising at most about 20 weight parts of the particles dispersed in the thermoplastic polymer per 100 weight parts of the thermoplastic polymer.
11. The foam of claim 1 comprising at least about 20 weight parts of the particles dispersed in the thermoplastic polymer per 100 weight parts of the thermoplastic polymer.

12. The foam of claim 1 wherein the particles have an average size in the longest dimension of at least about 10 microns.
13. The foam of claim 1 wherein the particles have an average size in the longest dimension of at least about 30 microns.
- 5 14. The foam of claim 1 wherein the particles are electrically non-conductive.
15. The foam of claim 1 wherein the foam has no more than about 10% open cell volume.
16. The foam of claim 1 comprising a sheet configuration with an average thickness of from about 1 mil to about 4 inches.
- 10 17. The foam of claim 1 comprising a sheet configuration with an average thickness of from about 1 mil to about 200 mils.
18. The foam of claim 1 comprising a sheet configuration with an average thickness of from about 0.2 inches to about 4 inches.
19. The foam of claim 1 comprising a sheet configuration with an average thickness of from about 1 mil to about 4 inches.
- 15 20. The foam of claim 1 wherein the foam has a density of from about 5 to about 40 pounds/ft³.
21. The foam of claim 1 wherein the foam has an area density of from about 10 to about 100 g/ft².
- 20 22. The foam of claim 1 wherein the foam has a flexural modulus of at most about 1,000 pounds/square inch.
23. The foam of claim 1 wherein the foam has a flexural modulus of from about 1,100 to about 1,800 pounds/square inch.
24. The foam of claim 1 wherein the foam has a flexural modulus of at least about 1,900 pounds/square inch.
- 25 25. The foam of claim 1 wherein the foam is unapertured.
26. The foam of claim 1 wherein the foam comprises at least about 50 weight percent of one or more polyolefins.
27. The foam of claim 1 wherein the foam comprises at least about 50 weight percent of one or more polyethylene homopolymers.
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28. The foam of claim 1 wherein the thermoplastic polymer comprises one or more polymers selected from polypropylene homopolymers, polypropylene copolymers, polyethylene homopolymers, polyethylene copolymers, ethylene/vinyl acetate copolymer, polystyrene homopolymer, polystyrene copolymer, and high impact polystyrene.

5 29. The foam of claim 1 wherein the particles have an average size in the longest dimension of at most about 100 microns.

30. The foam of claim 1 wherein the density of the foam is from about 0.5 to about 40 pounds/ft³.

31. The foam of claim 1 wherein the density of the foam is from about 10 to about 30
10 pounds/ft³.

32. A method of enhancing the sound attenuation of an article comprising attaching the foam of claim 1 to the article.

33. A method of enhancing the sound attenuation of an article comprising incorporating the foam of claim 1 into the article.

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